Course: N-5370: Research Methods 1

Placement in curriculum: Graduate standing in nursing: Undergraduate statistics course

Credit: 3-0 (Classroom only)

Course description: Focus on the role and process of scientific inquiry with thematic emphasis on theories, techniques and issues.

Course overview: This course provides the foundation for research critique and research utilization, and is the first of two courses for students who select the thesis option.

Course objectives: Upon completion of this course, the learner should be able to:

1. Evaluate the relevance of nursing and health-related research findings to the advancement of nursing practice.
2. Integrate components of the scientific method to design a research study.
3. Evaluate the fit between study designs and research questions and objectives.
4. Discuss issues related to instrument use in data collection.
5. Relate data analysis techniques to research questions and hypotheses.
6. Describe the essential elements of electronic data processing.
7. Analyze legal and ethical issues related to the conduct of research studies.

Topical outline:

1. Role of research in nursing; Evidence-based nursing practice
2. Science and limitations of scientific method; Ways of knowing; types of research; Quantitative and qualitative research
3. Ethics and scientific research
4. Research process; study variables; operational definitions
5. Research Problem; Purpose; Hypothesis
6. Review of literature
7. Conceptual/theoretical framework
8. Research Designs
9. Sampling techniques
10. Measurement; collecting and managing data
11. Data analysis: description and inferential statistics
12. Communicating research findings; critique and utilization
13. Proposal writing and seeking funding for research
Teaching methods: Lecture, discussion, study questions/class exercises; individual assignments; group interactive learning

Attendance and Participation:

Students are expected to be prepared for and attend each class. As the format of this class is lecture-discussion/seminars, all students are expected to have read the assigned materials and completed assignments. Class participation will be assessed by each student’s contribution to classroom discussions and activities.

Evaluation and Grading:

A. Grading Scale:
   - A= 90-100
   - B=80-89
   - C= 70-79
   - <70= D or F

B. Course requirements ( % of final grade):

- Research critique : 20 %
- Research proposal (includes mini-papers) 40%
- Final examination : 20%
- Student presentations: 10%
- Class participation & written assignments (study questions) 10%

\[
\frac{100 \%}{\text{Papers that are submitted to meet assignments are to be typed, double-spaced and meet all criteria specified. APA format is required.}}
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The most recent APA Manual (5th ed) must be used. A starting place for APA referencing style is : [www.ithaca.edu/library/course/apa.html](http://www.ithaca.edu/library/course/apa.html)

Proposal: Students may choose to work individually or in pairs to develop a research proposal. One grade will be assigned to each pair. A written documentation of individual participation and contribution to the project must be provided.

Critique: The critique of a nursing research article is an individual project. It should be selected from the review of literature selected for proposal development and must be approved by faculty. A copy of the article must be attached to the paper.

Final Exam: A comprehensive exam (combined multiple choice and essay) will be given at the end of the term.

Required text:

Student Responsibilities: Students are to notify the faculty if there are problems that interfere with their ability to fulfill the obligations of the course. Alternate due dates for assignments may be negotiated at the discretion of the faculty. This should be done in advance of the announced due date. A penalty will be assessed for each day an assignment is late unless prior arrangement have taken place.

Academic Honesty: Students are accountable for all work that is submitted or presented for evaluation. While collaboration with others prior to completing an assignment is encouraged, unauthorized collaboration will be considered cheating or plagiarism. Use of information from publications without proper acknowledgement and citation is also considered plagiarism. Penalties for plagiarism and/or cheating will be imposed according to the regulations of the College of Nursing and UTEP. See your student handbook and graduate catalog for specific details.

Americans with Disabilities: Students who require accommodations for class of clinical assignments due to disabilities should initiate and maintain the processes as designated by university policy. Accommodations will not be made until these procedures have been followed. Call Disabled Student Services (ext. 5148) for additional information.

Course Calendar:

<table>
<thead>
<tr>
<th>Dates</th>
<th>Topics &amp; Activities</th>
<th>Text Chapter/s</th>
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<tbody>
<tr>
<td>Aug. 24</td>
<td>Introduction to course; Pre-test; Attitude assessment; Role of research in nursing practice; Evidence-based practice</td>
<td>Chap. 1</td>
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<tr>
<td>Aug.31</td>
<td>Review of Literature; Conceptual/Theoretical Frameworks</td>
<td>Chaps. 5-6</td>
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<td>Class Exercise/group activity</td>
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<td></td>
<td>Submit answers to study questions</td>
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<td></td>
<td>(Nos. 2,3,4 &amp; 6)</td>
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<tr>
<td>Sept. 7</td>
<td>Science ; Ways of knowing; limitations of scientific method ; overview of quantitative qualitative research; Ethics and research</td>
<td>Chaps. 2,3,7</td>
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<td></td>
<td>Group activity</td>
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<td></td>
<td>Submit written assignments/ answer to study question No. 1</td>
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<tr>
<td>Sept. 14 &amp; 21</td>
<td>Research Process; Study Variables; Operational Definitions; Research Problem; Purpose; Hypotheses</td>
<td>Chap. 4</td>
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<tr>
<td></td>
<td>Class exercises</td>
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<tr>
<td>Sept. 28 &amp; Oct. 5</td>
<td>Research Designs; Internal Validity Threats; Sampling Techniques</td>
<td>Chaps. 8-12</td>
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Class exercise/group activity

9/8/04: Submit answers to study questions (Nos. 5, 7-13)

Oct. 12 Measurement; Collecting and managing data; reliability and validity of instruments/tools Chaps. 14-17

Group activity
Submit Mini-paper

October 19 & 26 Data Analyses; Levels of Measurement; Descriptive and inferential statistics Hypothesis Testing ; Interpreting research outcomes 10/19/04: Submit answers to study questions (Nos. 14-17)

Nov. 2 Research Report, Dissemination & Utilization Proposal Writing; Funding Submission Chaps. 24 - 25

Nov. 9 Research critique Group Activity Chap. 26

Nov. 6, 23 & Nov.30 Student Presentations of Research Proposals

Nov. 30: Submit Research Critique

Dec. 7 Final examination Submit of Research Proposal

Other Recommended Resources

Books


Websites

- Using APA Format:
  http://www.apastyle.org/styletips.html
  http://www.apastyle.org/elecsource.html
  http://www.ithaca.edu/library/course/apa.html

- Writing Consent Forms (from Friends Research Institute website):
  http://www.friendsresearch.org/f_inconstempl.html

- Research Methods Tutorials (from Bill Trochim’s Center for Social Research Methods website):
  http://www.trochim.human.cornell.edu/tutorial/TUTORIAL.HTM

- Selecting Statistics (from Bill Trochim’s Center for Social Research Methods website):
  http://www.socialresearchmethods.net/selstat/ssstart.htm

Study Questions
(May work in pairs or groups of 3 people)

1. Discuss the interrelationships among nursing research, theory and practice. 5

2. Select a problem area for research. Write a problem statement at the following levels: 6

  Level 1
  Level 11
  Level 111
3. Identify the variables of your proposed study: 6
   Independent variable
   Dependent variable
   Extraneous variable

4. Formulate operational definitions of variables in your proposed study 6

5. Submit at least 3 annotated bibliography for proposed study (Use APA citation format) 6

6. Write a pair of hypotheses for your proposed study: 4
   - Research hypothesis (Directional)
   - Null hypothesis

7. Discuss: 15
   a. different types of research designs: non-experimental; experimental; quasi-experimental; qualitative
   b. internal validity; external validity
   c. threats to internal validity of experimental design (at least 7)

8. Discuss the differences among the following: 4
   - Retrospective study
   - Prospective study
   - Longitudinal study
   - Cross-sectional

9. Differentiate between non-probability and probability sampling. Define all types possible under each 6

10. Differentiate the following: 4
    - Likert scale
    - Q-sort technique
    - Semantic-Differential Scale
    - Adelphi technique

11. Differentiate between reliability and validity pertaining to measuring instruments 6
    Define types of reliability; types of validity

12. What are the advantages and disadvantages of the following? 4
    - Mailed questionnaire
    - Face to face interview
    - Closed-ended questionnaire
    - Open-ended questions

13. Distinguish between participant observation and unobtrusive observation. 3
14. Differentiate the following types of measurement scales/levels and give an example of each:

- Nominal
- Ordinal
- Interval
- Ratio

15. Differentiate between parametric and non-parametric tests

16. Give examples of types of statistical tests of significance for each level of measurement (refer to no. 14 under parametric and non-parametric tests).

17. Define level of significance. Explain in relation to Types 1 and 11 errors in statistical testing.

GUIDELINES FOR CRITIQUE OF A RESEARCH ARTICLE

Select a research article from one of the scholarly nursing journals. Critically evaluate the research article using the following guidelines. Indicate the strengths and weaknesses. Do not use questions in these guidelines as topical headings; i.e., do not simply respond to the questions. These are guidelines only. This requirement should demonstrate your ability to create a work of original, scholarly writing.

Please note: A copy of the article must be attached to your paper. You should first seek approval of the article from the course faculty before writing your critique.

Criteria:

Title (5 points)
Does the title of the article accurately describe the study? In what way does it, or does it not? Is the language used in the title understandable and informative?

Abstract (5 points)
Does the abstract contain enough information about the study without being overly wordy? *Structured abstracts* (which use bold headings to indicate major topics) should state the purpose of the study, the problems that were investigated, the research question or hypotheses. A description of the study design and the methodology used, the sample, instruments used, other data collection procedures, and the results or findings. *Unstructured abstracts* (which use a paragraph form and which are almost constrained by a word limit imposed by the journal) should summarize as much of the same information as possible to offer the reader an understanding of the essence of the article.

Problem, purpose and hypothesis/es (10 points)
What are the research questions? Are these questions researchable in the sense that they can be carried out by the investigators? What is the significance of the study in terms of the nursing practice, adding to the body of scientific knowledge, etc.? Are the research questions stated in a concise and precise manner? Or, are the questions vague and difficult to determine? Is the problem statement given as a hypothesis/es? If hypotheses are given, in what form are they presented?

Operational Definitions, assumptions, limitations (10 points)
Are there operational definitions? Do they make sense? Does the problem statement contain a general description of the population? Can you delineate the independent and dependent variables? What are they? What are the assumptions and limitations of the study? Are they listed or do you have to infer what they are?

**Review of the literature and conceptual framework/model (10 points)**
Is the literature relevant to the study? Does it include timely as well as classic articles that pertain to the study? Are there a majority of primary rather than secondary sources listed (and how can you tell)? Does the review provide adequate background information? Do the authors state how this review provides support for their study, i.e., give background information for the identified research problem/question?

**Ethical considerations (10 points)**
Do the authors address protection of human subjects? Did they obtain permission to conduct this study in the setting?

**Methodology (30 points)**
*Design*: Is the design appropriate to the study? Is it described? What extraneous variables are associate with the design, if any? Are they identified? Can this design be replicated? Is the description adequate enough to allow replication of the entire study?

*Sample*: Does the methodology section describe the subjects used in the study, how they were selected and the location of the study? What are the sources of bias, if any, that are associated with the sample selection process. Were power and effect size calculated for this study?

*Instrumentation and data collection procedures*: How are issues of reliability and validity addressed? Is validity of the design as well as the instrument described or just the instrument? Do the instruments seem appropriate for the study, or would it have been better to use some other instruments? If so, why? Was the collection of data conducted in a standardized manner? Could you replicate the procedures of the study, given the information in the article?

**Results (10 points)**
Do the results follow logically from the design and methodology? Do the authors describe the results in a way that is understandable and clear? Do the results answer the research question/s or hypotheses/es?

Are the statistics supportive and appropriate for the research design? Does the article include supportive graphs, tables or charts? Do these help to describe the results? Are they easily understood?

**Summary and conclusions (5 points)**
What is your overall impression of the study? Does the author convince you about the conclusions that are drawn? Do the conclusions seem logical in light of the methodology/procedures, etc.?

**Significance for nursing (5 points)**
Do the authors draw an inference for nursing? Do they propose ways in which this article can have an action agenda?

**CRITERIA FOR EVALUATION OF MINI-PAPER**

*(Research Problem, Purpose, Research Questions & Variables)*

The body of your mini-paper should be no longer than five (5) double spaced pages.

**Criteria:**
1. Introduction: The purpose of the introduction is to introduce the problem area, establish its significance and indicate the investigator’s perspectives on the problem. It sets the stage for the study and clearly documents the need for the study.

2. Problem Statement: A problem is clearly identified. The problem is linked to a previous research inquiry (through references to the literature) or to a present clinical concern. The problem lends itself to investigation in a manner that conforms to ethical considerations for research.

The significance (importance) of the problem, and why it should be studied, must be clearly identified. The case must be made that investigating the problem has the potential to generate usable knowledge or to influence practice. The problem is timely and must be related to nursing and health care. Describe clearly how the study will make a contribution to knowledge and potentials for improving nursing practice and patient care.

3. State the research questions.

4. Purpose: State specifically the objective(s) of the study. The purpose statement must be clear and concise.

5. Operational Definitions: must be stated in measurable terms

6. Study Variables: The independent and dependent variables are clearly identified/stated.

CRITERIA FOR EVALUATION OF RESEARCH PROPOSAL

The body of your research proposal should be no longer than 25 pages (excluding the cover sheet, abstract, table of contents, references and appendix). Appendix materials may include data collecting instruments and informed consent form. APA format, 5th edition should be used. Use headings to identify sections of the proposal.

Criteria:

1. Research Problem: Background and significance; Purpose, Research questions, Variables, Definition of terms, Hypotheses (30 points)
   • The problem area and its significance to nursing is clearly defined.
   • The purpose of the study is clearly stated.
   • Questions and hypotheses (if appropriate) are clearly stated.
   • All essential variables are conceptually and operationally defined.

2. Review of Literature and Conceptual/Theoretical Framework (15 points)
   • Literature review consists of conceptual and data-based articles and are related to the problem.
   • Literature review is logically organized and provides a summarizing paragraph at the end of the section.
   • Conceptual/Theoretical framework is clearly explained with justification on its use in the proposed study.

3. Methodology: Research Design, Sampling, Data Collection Tools and Plan for Data analyses (35 points)
   • Research design is adequately described and appropriate for the purpose of the study; validity threats are addressed.
   • Sampling techniques and sample size are described with appropriate rationale.
   • Data collection instruments are clearly described including validity and reliability.
   • Plan for data analysis is clearly explained including level of data and statistical analysis indicated to answer research questions.
   • Limitations of proposed study are clearly stated.

4. Ethical Considerations (5 points)
• Protection of human subjects are adequately addressed. Sample of informed consent is provided in appendix.

5. Clarity, Format and Style (15 points)
• Title is clear, indicates study variables.
• Abstract (500 words) is concise; contains enough information about the study: problem, purpose/hypothesis, research design/methodology.
• Proposal is clearly written and organized in research format. Documentation of literature is complete and consistent with established publication guide.
• Proposal is free from errors in grammar and typing (evidence of careful proofreading).

LSML: 08/04